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ABSTRACT

This paper summarizes some studies designed to measure the effectiveness of reforms brought about by the Kentucky Educational Reform Act and the changes resulting from the implementation of the current assessment system, the Commonwealth Accountability Testing System (CATS). Results of one study indicate that the use of the writing portfolio did not improve the writing skills of Kentucky high school graduates. Data from the Kentucky Department of Education and the National Assessment of Educational Progress do indicate that Kentucky students are improving at all grade levels. CATS data show improvements, but many are skeptical for reasons of possible test bias and questions of test validity. Measuring the success of educational reform in Kentucky is nearly impossible. Real life examples can be found to support all of the different opinions about the relative success of school reform in Kentucky. (Contains 8 tables and 13 references.) (SLD)

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Measuring the Success of Education Reform in Kentucky

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In November 1985, the Council for Better Education, a nonprofit corporation, filed a lawsuit against the Governor of Kentucky, the President of the Senate, the Speaker of the House of Representatives, and the State Board of Education and its members in the Franklin Circuit Court. The plaintiff challenged the equity and adequacy of funds provided for the education of young Kentuckians. The Circuit Court ruled that the Governor had a constitutional duty to make appropriate recommendations and that the General Assembly had failed to provide an efficient system of common schools, and that the system of school financing was inefficient and in the constitutional sense discriminatory. On appeal, the Kentucky Supreme Court issued an opinion in June 1989, which held that the system of common schools in Kentucky was unconstitutional. Responding to this ruling by the highest court in Kentucky, the General Assembly embarked on restructuring the entire K-12 public education system in Kentucky. It appointed a Task Force on Education Reform in July1989, composed of the leadership of the House and Senate and appointees of the governor. The recommendations of the Task Force resulted in House Bill 940, which was approved by the 1990 General Assembly. The governor signed the Kentucky Education Reform Act (KERA) on April 11, 1990. An era of unprecedented educational reform began in Kentucky. This Act was acclaimed to be the most comprehensive educational reform act in the nation. It has multiple layers of provisions. Each provision of the Act is followed by a brief explanation, a detailed set of procedures, and schedule for the implementation of each provision. Provisions of the Act are presented in Table 1. Major components of the Act and their explanations as given in the Act are as follows:

Insert Table 1 about here

- Curriculum - High educational goals set by Kentuckians to clearly state what high school graduates are expected to know and be able to do.
- Assessment - An assessment process to measure whether the goals are being reached by all students.
- Accountability, Rewards, and Sanctions - An accountability system to reward schools that improve their success with students, and to intervene in schools failing to make progress.
- School-Based Decision Making - School councils made up of educators and parents to make decisions on curriculum, instruction, and school management, to create an environment for student achievement and school success.
- Professional Development - Increased funding for professional development activities for educators to learn new ways to more effectively achieve success with all students.
- Preschool Programs - Early childhood education programs to better prepare children who are at risk of educational failure.
- State Support - Funding for a longer school day, school week, and school year, to assist students who need more time to achieve academic success.
- Technology in Education - A major commitment to technology as an instructional and administrative resource.
- Family Resource Centers And Youth Services Centers - To assist students and families in need, by providing resources and referrals to service agencies in the community, so that students can focus on learning.

- Governance - Changes in the governance structure, to reduce the politics involved in the operation of many of Kentucky's school districts and to improve the leadership capability at the state and local levels.
- Finance - A new funding commitment to support the new education initiatives in the state.

A review of the provisions of KERA, its multiple layers of requirements, and detailed operational procedures leave no doubt about the comprehensiveness of this legislation. It was an enormous piece of legislation and initiated massive educational reform in Kentucky aimed at overhauling the entire K-12 education in the state.

Since the implementation of KERA, Kentucky has developed Kentucky's Learners Goals and Academic Expectations, 75 in all, of its high school graduates. These are presented in Table 2. In 1993 the Academic Expectations gave birth to a two volume document called the

Insert Table 2 about here

Transformation. It provided guidance in curriculum development. Another document was developed in 1995 called the Core Content for Assessment. It identified reading, writing, math, science, social studies, arts and humanities, and practical living/vocational studies as the core curriculum areas. In 1998 the Core Content was expanded into another document called the Program of Studies. It outlined what subject matter was to be taught in which grades.

A comprehensive assessment system known as the Kentucky Instructional Retrieval Information System (KIRIS), consisting of paper-pencil tests, performance events, and writing portfolios was developed. After a few years, it came under severe criticism and was replaced. The current assessment system, known as Commonwealth Accountability Testing System (CATS), was developed in 1998 to specifically test the students on the Program of Studies. This system consists of pencil-paper tests in the curriculum areas and writing portfolios.

The education reform focused itself entirely on the K-12 public education system. The General Assembly did not pay any attention to higher education including teacher education. It did not consider teacher education as a part of educational reform. In fact, higher education was totally excluded. The various committees and task forces formed by the General Assembly for drafting KERA did not have a single teacher educator in their membership. A few higher education faculty members from out of state were used as consultants.

The enactment of KERA was followed by a massive tax increase, more than one billion dollars per year. State funding of other agencies including higher education was cut in order to support the educational reform. Following the passage of KERA higher education including teacher preparation programs continued to suffer from the budget cuts for several years.

In 1993 the Education Professionals Standards Board (EPSB) established an ad hoc group called the Council on New Teacher Standards for Preparation and Certification. The Council was charged with the responsibility of developing the New Teachers Standards. It came up with seven standards. In 1994, an eighth standard, Knowledge of Content, was added. More recently, standard nine, Technology, has been added. The current New Teacher Standards are presented in Table 3.

Insert Table 3 about here

Following the development of the New Teacher Standards, the EPSB attempted to develop a performance based system for new teacher assessment. It established numerous task forces to design on-demand assessment tasks for assessing new teachers at elementary, middle, and high school levels in a variety of disciplines. These task forces worked diligently and designed numerous tasks which were pilot tested and revised. However, this work met with great resistance by several interest groups and the idea of new teacher assessment simply disappeared. Instead, in 1996, the EPSB aligned the accreditation of teacher education programs with the New Teacher Standards. Teacher preparation programs, in addition to other requirements, e.g. ACT scores, grade point average, PRAXIS test scores, etc., were also required to show that they had a system of continuous performance assessment of teacher candidates.

Effectiveness of KERA

In the last four years I have conducted a few studies to examine the effectiveness of KERA. Some of these I have presented at the MSERA conferences. Ability to use basic communication and mathematics skills is the number one goal of the Kentucky Learning Goals and Academic Expectations. One of the Academic Expectations in the communication goal is that all students should write for multiple purposes in multiple forms for a variety of audiences. The Writing Portfolio assessed in grades 4, 7, and 12 is calculated to assess this Expectation. Designed by a committee of Kentucky English/Language Arts educators, the Writing Portfolio consists of a collection of students' written products in four broad categories:

- Personal experience writing;
- Imaginative writing;
- Reflective writing;
- Trans-active writing for real-world purposes and audiences.

The Writing Portfolios are scored locally by school teachers who have been provided training in portfolio scoring. Six criteria are applied holistically to produce a single final judgment, Novice, Apprentice, Proficient, or Distinguished. The six criteria are:

- Purpose/Audience Awareness
- Idea development/Support;
- Organization;
- Sentence Structure and Variety;
- Language (Word Choice and Usage); and,
- Correctness (spelling, punctuation, and capitalization).

The Writing Portfolio is a major component of CATS. Has the Writing Portfolio improved the writing skills of students? In 2000 I conducted a study comparing the writing skills, as measured by University Writing Requirement (UWR) at Eastern Kentucky University, of Kentucky high school graduates who had gone through CATS writing portfolio (post-KERA) with their peers prior to the implementation of KERA. Specifically, the objectives were to (a) compare the UWR

scores of pre-and post KERA students, and (b) determine the significance of the difference. A total of 50 UWR essays written by Kentucky students in 1989 (pre-KERA) and 50 UWR essays written by Kentucky students on the same prompt in 1997, both randomly selected, were used for the study. Both sets of essays were read and scored by seven UWR readers in the same manner in which they are scored at real UWR scoring sessions. Six of the seven readers had come on board in the1990s and could not have read/scored the essays in 1989. The null hypothesis was that there was no difference between the mean UWR scores of the two groups of students. The result of this study showed that though not statistically significant, the mean UWR score of the 1997 group, 8.20, was lower than the mean score of the 1989 group, 8.42. According to the result of this study, the Writing Portfolio did not improve the writing skills of Kentucky high school graduates as measured by UWR.

Other Indicators of KERA's Effectiveness

The Kentucky Department of Education (KDE) reports that since the implementation of CATS in 1998, students at all grade levels are showing progress. All performance trend lines are going up in all subjects, and elementary, middle, and high schools are reducing the percentage of novice-level learners every year. This researcher was unable to find data on the percentages of students placed in the novice, apprentice, proficient, and distinguished categories. Overall gain of scores at the elementary, middle, and high school levels as reported by KDE is presented in Tables 4, 5, and 6.

Insert Tables 4, 5, and 6 here

The National Assessment of Educational Progress (NAEP) gives a similar picture. On the NAEP test, in 1996, 23% of Kentucky's eight graders scored at the Proficient level or above in science. In 2000 it went up to 29%. In 8th grade math, 16% scored at the Proficient level or above in 1996. In 2000 it went up to 21%. On 4th grade reading, 30 % scored at or above Proficient level in 2002 as opposed to 29 in 1998, and 26% in 1994. In math, 16%, 4th graders scored at the Proficient or above level in 1996. This percentage increased to 17% in 2000. Kentucky's NAEP test scores and U. S. averages are presented in Table 7. According to these scores, in 2002 Kentucky's 4th graders scored one point higher than the national average in reading and one point higher than the national average in science in 2000. Kentucky's 8th graders also scored one point higher than the national average in reading in 2002. These scores are reported in Table 7.

Insert Table 7 about here

In 8th grade math, the percentage of students who scored at the Basic level in 1996 was 56. In the year 2000 it increased to 63. The percentage of students scoring at the Advanced level increased from one percent to three percent. In 1998 the percentage of 8th graders who scored at the Basic level in reading was 74. In 2002 it went up to 78. The percentage of students at the Advance or above level remained unchanged at two. In science, the percentage of 8th graders who scored at the Basic level in 1996 was 58. In 2000 it increased to 62%. At the Advance level a one percent increase, from two to three, was reported.

At the 4th grade level, in mathematics, 60% of the students scored at the Basic or above. One percent scored at the Advance or higher level. No change occurred in these percentages from 1996 to 2000. In reading, 56% of the 4th graders scored at the Basic or above level in 1994. This increased to 62% in 1998 and 64% in 2002. At the Advance level, the percentage remained unchanged at six. In Science 70 %, 4th graders scored at the Basic level or above while 3% were at the Advance level or above. In 2002, 86% of the 4th graders scored at the Basic level in writing and 2% at the Advance or above level. These results are reported in Table 8.

Insert Table 8 about here

Discussion

The CATS data reported above shows that Kentucky students are making steady progress. Many educators and groups of concerned citizens are skeptical of the validity of CATS scores. There are two sides in this argument. According to one, a major issue related to CATS scores is the motivation factor. The CATS scores are used in school's accountability formulae. They do not have any effect on students' graduation. Students have no reason to do their best on CATS assessment. Therefore, students' performance on CATS assessment is not necessarily indicative of their academic achievement. To address this problem there are reports of schools giving a variety of incentives including laptop computers to students for the purpose of motivation.

The other side questions the validity of CATS scores because each year, numerous stories appear in the newspapers about the irregularities occurring during CATS assessment. These range from teachers helping students during testing to an inordinate number of students receiving accommodations and adaptations on CATS assessment. There are also complaints that teachers now only "teach to the tests". Both teachers and administrators deny it, but the students and their parents vouch for it.

Scoring of the tests by their own teachers is also questioned on account of subjectivity. In a recent survey of 800 teachers, nearly "half of the teachers said biases affect portfolio scoring because they give credit to their own students for effort…". (Kening, Chris. Courier Journal, 8/23/03). As a teacher educator who, for years, has taught two to three 800 level graduate courses each semester, consisting 100% of full-time teachers, this researcher witnessed the writing skills, computational skills, reading comprehension skills, general knowledge, awareness of civics and government, U. S. history, geography, economics, etc. of her students every day and often wondered how many of them graduated from high school. Based on the personal knowledge of the teachers' writing skills, many of whom themselves in need of assistance from the writing lab, this researcher does not give credence to CATS scores on portfolios. This researcher's opinion is supported by other researchers, "…portfolio scores are often "inflated." Random audits show that auditors disagree with original scores 20 percent to 40 percent of the time, with scores typically lowered, not raised". (Kening, Chris. Courier Journal, 8/23/03).

The 4th and 8th graders' scores on NAEP assessment have shown a slight but steady increase over the years. Numerous concerns are voiced about NAEP testing. These include NAEP sampling procedures, the limited number of students participating in NEAP testing, etc. Kentucky has 781 elementary and 216 middle schools. The Kentucky NEAP test scores are based on 106 elementary and 100 middle schools. The total number of 4th and 8th grade students in 2000-2001 was 49,719 and 47,259 respectively. NAEP sample consisted of 3,180 and 3,000 students respectively at each grade level (30 students per subject, per grade, per school).

Assessment scores based on 6.3% of the student population at each grade level do not create a high level of confidence in their validity or reliability.

One more reason for the lack of confidence in the CATS and NEAP test scores is the disparity between them and the college entrance examination. "ACT scores have remained almost flat, a disparity that has fueled criticism of inflated rankings". (Kening, Chris. Courier Journal, 8/23/03). The *2000 Review of Research on KERA* produced by the Kentucky Institute for Education Research also notes this discrepancy. "Standardized test scores (i.e., tests other than especially constructed Kentucky assessments) have generally been below or near national norm performance. However, Kentucky's statewide data are better than national averages in several areas." (Petrosko, Lindel, and Pankratz).

Another source of data is the number of students in the developmental or remedial courses. Given the steady progress shown in CATS scores a logical result would be a decline in the number of freshmen students admitted in these programs. However, the percentage of freshmen in the developmental or remedial programs has remained unchanged over the years.

Faculty members who have been teaching since before KERA, in an informal survey, said that undergraduate students of today (these students have been through both KIRIS and CATS assessments in schools) are not any different than the students before KERA. Most frequent comments made by the university faculty were, "There's no difference in their knowledge of the world"; "They have no ability to write, no mechanics of writing", "They don't know how to spell or express themselves verbally or on paper"; "They are ill-prepared for college"; "They are more dependent and less respectful"; "Problem solving, critical thinking, writing, math computation, no, no change"; "Really none. May be they are more accepting of writing assignments but then they can't write", "No, I don't see any difference." The only different comment was, "Yes, students are now more oriented to hands-on type of things".

A very important variable in the success of KERA is the quality of teachers. Universities cannot completely turn around ill prepared students into quality teachers in four years, especially when their accountability and funding formulae include criteria such as student retention and graduation rates. And, universities are not in a position to be selective in their admission requirements because of the pressure put on them to produce greater number of teachers in a shorter amount of time because of a teacher shortage. In recent years, the quality of teacher preparation which was already poor, has further deteriorated. Adding to the problem of the ill prepared teachers is the number of uncertified or emergency certified teachers currently teaching. In 2002 the number of teachers in this category was 1,800.

Another very important variable is the counter productive environment. Even the best qualified teachers cannot be effective without the necessary support especially from parents. A large number of teachers are working with children who come from generation after generation of poverty and illiteracy. They have been raised with WIC, Medicaid, disability, food stamps, and other entitlement programs. According to teachers, many of their students openly and clearly state that their goal is to draw their "salary from the government", and "live on the government check". Teachers also report that many children are coached by their family members not to do well in school because it may cost them the loss of their SSI check, in most cases, the only source of income. Teachers feel discouraged, frustrated, and defeated against these environmental forces. They complain about it but are unable to change the course.

Conclusion

Measuring the success of educational reform in Kentucky is nearly impossible. The Kentucky Education Reform Act was enacted in response to a complaint filed in a court of law that the funding of education in Kentucky was inefficient and discriminatory. The reform provided for a comprehensive financing system for the school districts in Kentucky. Therefore, the reform addressed the complaint and granted relief to the complainants.

The major purpose of the reform was high academic achievement by all high school graduates in Kentucky. Have Kentucky high school graduates attained the Learning Goals and Academic Expectations? The CATS assessment results show good progress from year to year. The NEAP results show a limited progress. But this progress is not reflected in college entrance examinations or in the students' academic performance as seen and measured by the university faculty. The slogan of the reform was, "All students can learn at high level". The fact is that after 13 years of the reform, 56 to 86 percent of Kentucky students are at the Basic level, and 1 to 6 percent at the advance level in the subjects assessed by NEAP.

The success of education reform is difficult to measure when the effects of some very critical intervening variables, e.g., teacher quality, quality of instruction, students' motivation, and some counter productive attitudes attributed to large scale abuse of a very well intentioned welfare system, etc. are intertwined and cannot be sifted out. Is the reform unsuccessful because it is inherently flawed, or is it because of a large number of unprepared, under-prepared, and ill prepared teachers? Is the reform unsuccessful because it is faulty or because of its insufficient financing which is the view of some important stakeholders? In one way the reform has come full circle. In January 2003 a law suit was filed on behalf of 16 students and their parents from 8 south central Kentucky school districts accusing the General Assembly of failing to meet its constitutional duty to fund education adequately. (Rodrigues, Courier Journal, October 16) And, on Sept. 17, 2003, another law suit was filed in Franklin Circuit Court by a coalition of 164 school districts, called the Council for Better Education, accusing the legislature of inadequately funding public schools. Like the law suit filed in 1985, these law suits name the Senate President, House Speaker, and the Governor. (Rodrigues, Courier Journal, September 18).

The authors of the *2000 Review of Research on KERA* in their Executive Summary have said it best, "Has KERA succeeded? However, a more realistic view is that reform does not have a sharply defined termination point. If school reform is an ongoing process, then the following is the question: Is KERA working? This review could be portrayed as an effort to answer the latter question. The person who reads chapters in this volume will learn that the question has no clear-cut answer. Many researchers would respond that it depends on whom, when, and where you ask the question. Opinions fill the spectrum from "success beyond all expectations" to "dismal failure" of an experiment in education…There are real-life examples to support all of the differing opinions about the relative success of school reform in Kentucky." Petrosko, Lindle, & Pankratz.

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Table 1. Provisions of the Kentucky Education Reform Act

1. Curriculum
2. Accountability: Assessment, Rewards, and Sanctions
3. Distinguished Educators
4. Professional Development
5. Preschool Programs
6. Primary Program
7. Class size
8. Age of Compulsory Attendance
9. Graduation Requirements
10. Graduation Requirements
11. Technology in Education
12. Extended School Services
13. Family Resource Centers and Youth Services Centers
14. Governance (State Board for Elementary and Secondary Education, Commissioner of Education, Department of Education State Board for Adult and Technical Education, Education Professional Standards Board, Local Board of Education, Local Superintendent, School-Based Decision Making, School Employees, Education Accountability Office)
15. Finance - Support Education Excellence in Kentucky (SEEK) State Support, Local Support, Facilities, Special Programs Funded, Salaries.

Table 2. Kentucky's Learning Goals and Academic Expectations

Goal 1: Students are able to use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives.

Goal 2: Students shall develop their abilities to apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, practical living studies, and vocational studies to what they will encounter throughout their lives.

Goal 3: Students shall develop their abilities to become self-sufficient individuals.

Goal 4: Students shall develop their abilities to become responsible members of a family work group, or community, including demonstrating effectiveness in community service.

Goal 5: Students shall develop their abilities to think and solve problems in school situations in a variety of situations they will encounter in life.

Goal 6: Students shall develop their abilities to connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through various media sources.

Note: Each goal has 3 to 38 expectations for a total of 75.

Table 3. New Teacher Standards

Standard I - Designs/Plans Instruction
The teacher designs/plans instruction and learning climates that develop student abilities to use communication skills, apply core concepts, become self-sufficient individuals, become responsible team members, think and solve problems, and integrate knowledge.

Standard II - Creates/Maintains Learning Climate
The teacher creates a learning climate that supports the development of student abilities to use communication skills, apply core concepts, become self-sufficient individuals, become responsible team members, think and solve problems, and integrate knowledge.

Standard III - Implements/Manages Instruction
The teacher introduces/implements/manages instruction that develops student abilities to use communication skills, apply core concepts, become self-sufficient individuals become responsible team members, think and solve problems, and integrate knowledge.

Standard IV - Assesses and Communicates Learning Results
The teacher assesses learning and communicates results to students and others with respect to student abilities to use communication skills, apply core concepts, become self sufficient individuals, becomes responsible team members, think and solve problems, and integrate knowledge.

Standard V - Reflects/Evaluates Teaching/Learning
The teacher reflects on and evaluates specific teaching/learning situations and/or programs

Standard VI - Collaborates with Colleagues/Parents/Others
The teacher collaborates with colleagues, parents, and other agencies to design, implement, and support learning programs that develop student abilities to use communication skills, apply core concepts, become self-sufficient individuals, become responsible team members, think and solve problems, and integrate knowledge.

Standard VII - Engages in Professional Development
The teacher evaluates his/her overall performance with respect to modeling and teaching Kentucky's learning goals, refines the skills and processes necessary, and implements a professional development plan.

Standard VIII - Knowledge of Content
The teacher demonstrates a current and sufficient academic knowledge of certified content areas to develop student knowledge and performance in those areas.

Standard IX - Technology
The teacher uses technology to support instruction; access and manipulate data; enhance professional growth and productivity; communicate and collaborate with colleagues, parents, and the community; and conduct research.

Note: Each standard has 2 to 15 indicators

Table 4. Gain of Scores on CATS at the Elementary Level From 1999 to 2003

Arts and Humanities	from 41.30 to 55.42
Mathematics	from 57.74 to 67.65
Practical Living/Vocational	from 69.73 to 77.32
Reading	from 78.88 to 83.50
Science	from 70.16 to 81.72
Social Studies	from 66.31 to 74.16
Writing	from 51.96 to 68.04

Table 5. Gain of Scores on CATS at the Middle School Level from 1999 to 2003

Art and Humanities	from 57.17 to 69.34
Mathematics	from 56.93 to 65.67
Practical Living/Vocational	from 66.45 to 70.00
Reading	from 78.06 to 82.71
Science	from 61.45 to 68.33
Social Studies	from 60.89 to 70.33
Writing	from 39.24 to 51.86

Table 6. Gain of Scores on CATS at the High School Level from 1999 to 2003

Arts and Humanities	from 48.06 to 64.62
Mathematics	from 56.07 to 64.37
Practical Living/Vocational	from 71.44 to 75.59
Reading	from 63.60 to 70.64
Science	from 59.12 to 63.95
Social Studies	from 62.33 to 67.28
Writing	from 56.08 to 64.45

Table 7. NAEP Test Results
% of Students Scoring proficient or above

Subject	1994	1996	1998	2000	2002	US Average
4th grade reading	26		29		30	29
4th grade math		16		17		25
4th grade science				29		28
4th grade writing					27	not available
8th grade math		16		21		26
8th grade Science		23		29		30
8th grade reading			29		32	31
8th grade writing			21		25	24

Table 8. NEAP Test Results
% of Students Scoring at or Above Basic and Advanced levels

Subject	Grade	Year	Basic	Advance
Mathematics	4th	1996	60	1
Mathematics	4th	2000	60	1
Reading	4th	1994	56	6
Reading	4th	1998	62	6
Reading	4th	2002	64	6
Science	4th	2000	70	3
Writing	4th	2002	86	2
Mathematics	8th	1996	56	1
Mathematics	8th	2000	63	3
Reading	8th	1998	74	2
Reading	8th	2002	78	2
Science	8th	1996	58	2
Science	8th	2000	62	3
Writing	8th	1998	84	1
Writing	8th	2002	85	1

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